

Implementation of Smart & Secure Gate Pass System using QR Code

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ABSTRACT

At present, the safety of the students has become the major concern for most of the educational institution. Along with the quality of education, parents want their wards to be safe. Talking about the safety, Gate pass system is an integral part of the hostel management which relates to security of students.

The objective and scope of the proposed work that is automated gate pass system is to record the arrival and departure of the students in institution. This project will simplify the task of traditional gate pass system in which the warden has to generate the gate pass slip every time when a hosteller has to move out of college premises and the warden was only responsible person for the maintenance of the records. We will facilitate automation to this gate pass which will reduce the paper work by providing the electronic version of the paper gate pass. In this the monitoring will be done by the admin and warden and the warden has all the access to accept or reject the application of the student. The system is very user friendly and it is anticipated that functions of the system are easily accessed by administrators, faculties and students.

KEYWORDS: Gate pass, automation, hostel management, QR code, security, monitoring

I. INTRODUCTION

With the upswing of technology in the 21st century, new and visionary gadgets are developed to make life effortless. Still the safety of the students is the most remarkable component to pave the wave for the advanced technology [1]. Presently most of the institution is using the register method to keep track of incoming and outgoing hostellers. This register is maintained manually, whenever a student (hosteller) has to go then a gate pass slip is being generated and is signed by the warden in which the details and the timings are mentioned. This gate pass is generated for the security purpose. The student before requesting for a gate pass has to mention the reason for his/her departure then only the warden allows. The gate pass is usually in a form of slip. This slip remains of no use once out of the premises and there is wastage of paper. Manual record management requires vast amounts of documents to be shipped to storage facilities only to necessitate when needed and has resulted in the unnecessary expense of both time and money [2].

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On the other hand many innovations have been developed to fasten its transaction. One of such innovation is the invention of the E-Gate Pass system whose sole aim is to upgrade the level of the old traditional method by increasing its efficiency and effectiveness by reducing the manual work [3]. Further the software has improved the working method by replacing the current manual system. Our project proposes to give "Paper Saving Idea" by the use of technology.[4] It consist of such a design that the student just have to mention the required details and can get the permission without wasting time in the queue.

II. PROPOSED SYSTEM

Our propose system digitally manages the arrival and departure of the students on short term and long term leaves [5]. Automated Gate Pass System is to keep track on each student's entry and exit. The sole aim of this system will be to modernize and automate the manual pass slip system, which will be considered a

technology to address the gap using different coding languages. This system counters the present situation in the Gate Pass Present System, designed to manage records, particularly for hostellers. Records are accessed directly by administration.

At today's world everything is based on touch screens like our smart phones, laptops, smart TV's, etc. It

becomes Very convenient to give input using touch and also the output is received on it. Touch screen operation is very easy and can be done by people of any age. Touch screens here have a very important role in getting data from students to generate his/her gate pass [6]. There are various benefits by bringing Automation in the existing method some of them are:

S. NO.	Key point	Reason
1.	Accuracy	In contrast to the conventional system, the gate pass management system is precise, as there is less chance of wrong entries.
2.	Live Reporting	All student's details like name, reason of going and the time duration outside the hostel, can be retrieved and downloaded in real-time
3.	Easy Reporting	Cross checking of the information becomes a time consuming process in the traditional system. On the other hand, GateMate can significantly reduce the retrieving time to few minutes. Additional to this, the admin with a single click can retrieve entries of the whole day
4.	Pre-Registration	Students can pre-register themselves by filling all the details. This allow students to sign in quickly which results in time management
5.	Approval Based Exit	Students are allowed to leave when email confirmation is done
6.	Significant Savings	Automation can notably bring down the cost of security functioning. The system can considerably reduce the stationary for maintaining the records. It can also brings down the costs for infrastructure and staff for maintaining the same

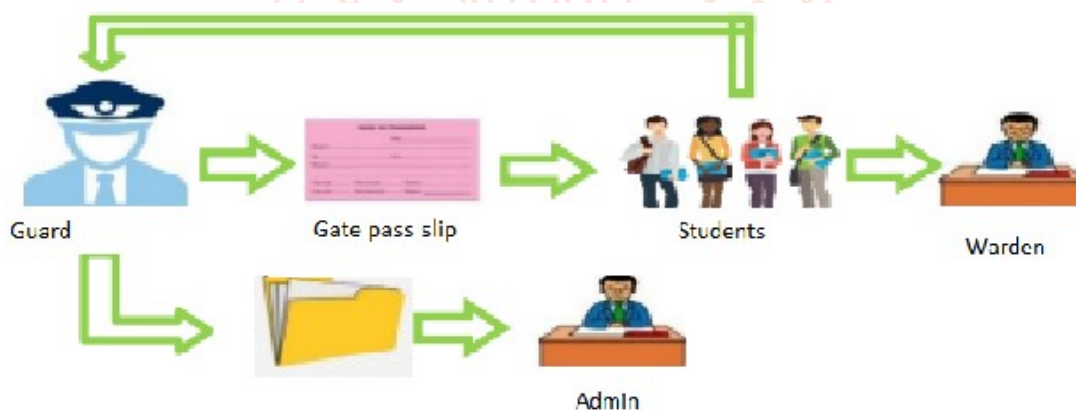


Fig1. Earlier Technical situation

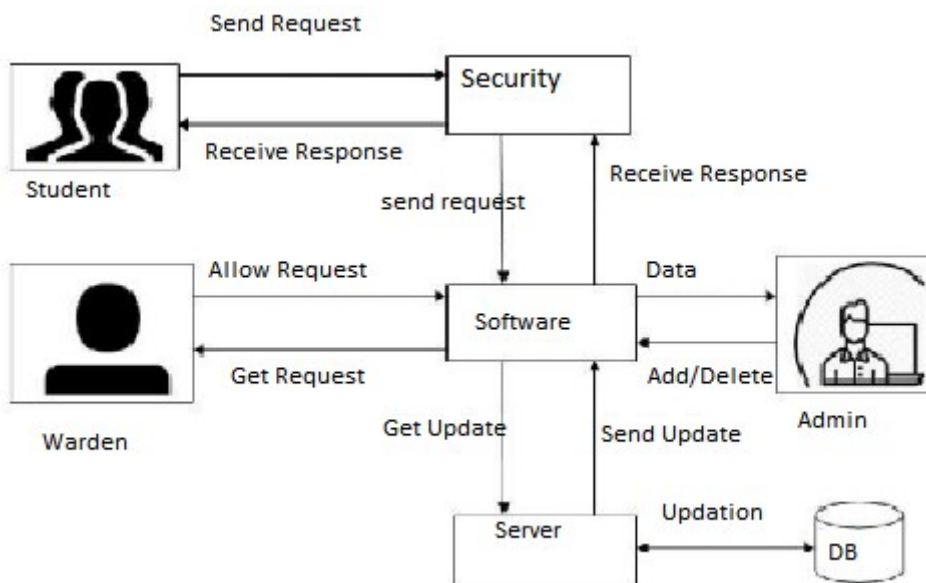


Fig2. Present System

III. MODULAR DESCRIPTION

The Gate Mate web application will be divided into 5 crucial modules which are as follows:

1. Authentication
2. Form filling
3. Mail alert along with QR code
4. Scanning of the QR code
5. Storing of the data in the database

A. Authentication

The process of identifying an individual on the basis of mail id and password. The Authentication process is different from that of authorization. In authentication individuals are given the access to system objects based on their identity.

B. Form Filling

Before leaving, students have to fill the online form mentioning details like:

- *Name *roll number *room no. and duration
- *mail *branch *reason

C. Mail Alert

After submission of the form by the student the warden have the rights either to accept or to reject the request. On rejection a mail would be sent to the student with reason of rejection. If the request gets accepted the student will receive an email comprised of the permission along with a QR code.

D. Scanning of the QR code

On receiving of the QR code by the warden, the student needs to get the code scanned by the scanner which would be installed at the exit gate. The students are not allowed to leave the premises until they get their code scanned.

E. Saving of the data in the Database

After scanning the code, the details of the student will gets automatically saved in the database.

IV. SYSTEM ARCHITECTURE

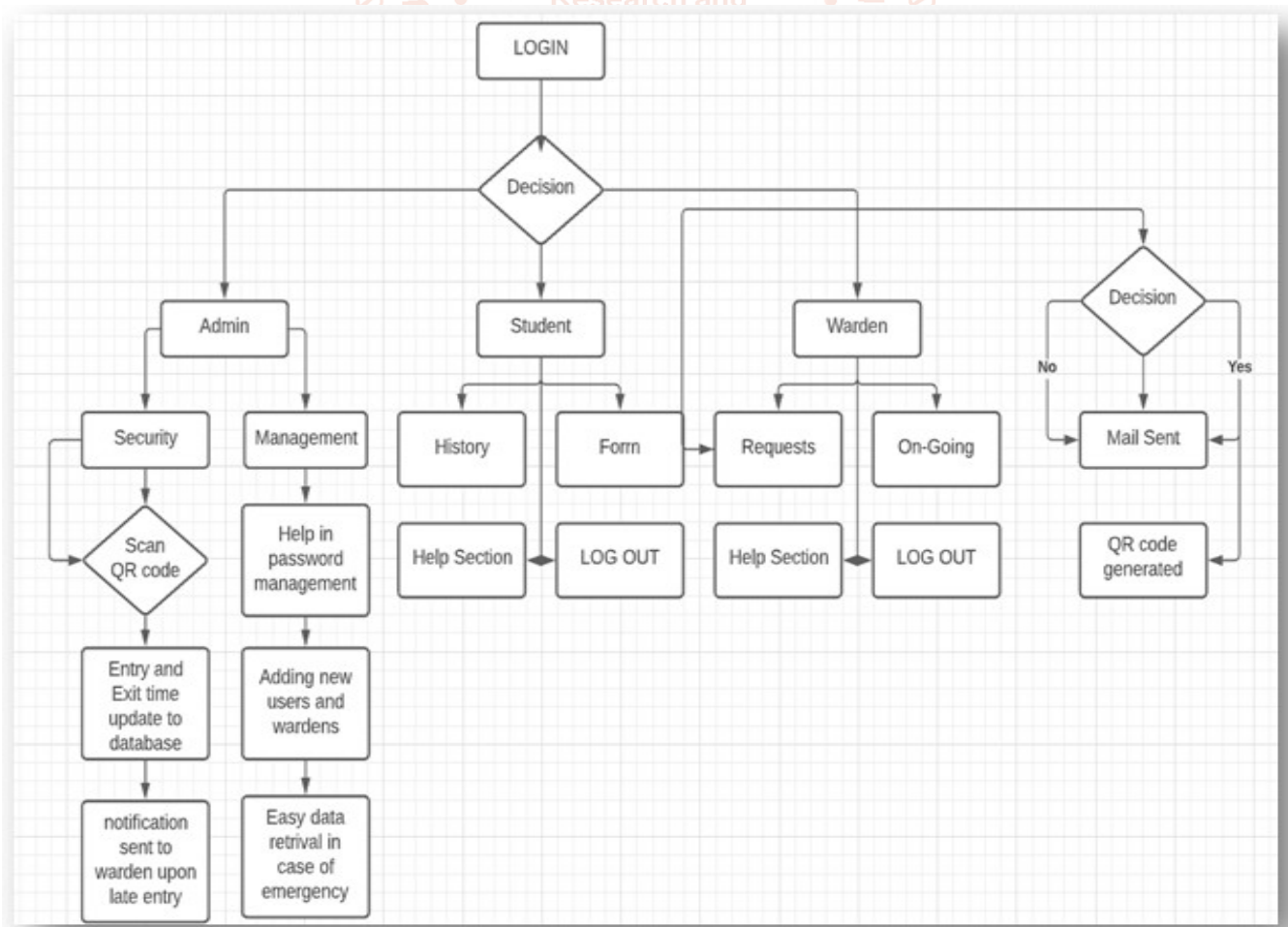


Fig 3. System Architecture

V. LAYOUT OF THE PROPOSED MODEL

Step1: Login Page

There will be 3 type of login id:

- STUDENT
- WARDEN
- ADMIN

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AND TECHNOLOGY

HOSTEL GATE PASS SYSTEM

0201csai004@niet.co.in

.....

Choose your role : **STUDENT** ▾

SIGN IN

[First Time LogIn?](#) [Forgot Password!](#)


FORM

HISTORY

PROFILE

CONTACT US

LOG OUT


devansh singh

About

I'm devansh singh. Student at NIET, I enjoy creating user-centric, delightful and human experiences.

Personal Details

Full Name
devansh singh

Roll Number
2001331520043

E.R.P
0201CSA/006

More Details

Fathers's Name
alok kumar singh

Penalty
3

Email
0201csai004@niet.co.in

Branch
B.TECH CSE AI & A 4 SEMESTER

Phone
7251072309

Father's Phone Number
9412736380

Password
.....

Step2: Form Filling:

Student needs to enter the required details.

GATEMATE

ALL FIELDS ARE MANDATORY!

Hostel Room Number *

date and time of leaving the hostel *

date and time of returning to the hostel *

Reason *

Submit

Step3: warden receives the request by the student

LEAVE APPLICATION REQUEST									
STUDENT'S NAME	PHONE NUMBER	FATHER'S NUMBER	PENALTIES	BRANCH	ROOM	DATE / TIME OF LEAVING	DATE / TIME OF RETURNING	REASON	COMMENTS
devansh singh	7251072309	9412736580	3	B.TECH CSE AI A 4 SEMESTER	69	2022-05-09 09:20:00.000000	2022-05-09 15:30:00.000000	going to the doctor	LEAVE GRANTED!

Step 4: student receives the mail from warden along with the QR code



NOIDA INSTITUTE OF ENGINEERING & TECHNOLOGY

19, Knowledge Park - II, Institutional Area, Greater Noida, G.B Nagar, U.P

Hi devansh singh

Thank you for using the Gatemate portal to apply for a gatepass, your form is accepted.

Student's Details:

Name: devansh singh
 Branch: B.TECH CSE AI A 4 SEMESTER
 ERP: 0201CSAI006
 Roll No: 2001331520043
 Room No: 69
 Phone No: 7251072309
 Email: 0201csai004@niet.co.in

Additional Details:

father's Name: alok kumar singh
 Father's No: 9412736580
 Leaving: 2022-05-09 09:20:00.000000
 Returning: 2022-05-09 15:30:00.000000

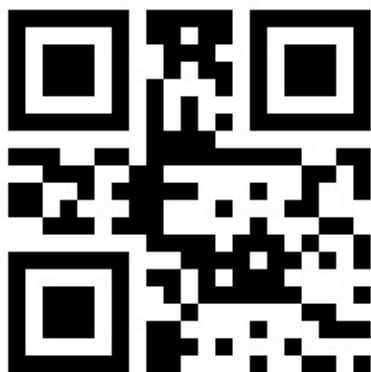
[Download invoice as PDF](#)

Warden's Comments:

REASON: going to the doctor

COMMENTS:

QR:

**VI. SYSTEM DEVELOPMENT**

System development involves the recurring process of Building and demonstrating the said innovation. The hardware and software devices used are specified clearly. Throughout the system development, a computer unit with the specifications of at least 4GB RAM, Hard Disk Drive of 1 TB will be used. Similarly, software applications used in the study were Visual Studio code and XAMPP server. The front-end languages used were the HTML, CSS, Java script and the back-end languages used were PHP programming language for the development of

The system and My SQL for database file management and to ensure effective delivery, Reliable, high performance, and scale able data processes embedded in the system.

VII. LITERATURE SURVEY

Earlier the traditional methods were followed by colleges in the form of gate slip. They generally maintained IN-OUT register for this purpose. However, this system is heavily flawed because of following reasons:

1. The paper- based system can be manipulated easily, keeping the security of the system at stake.
2. This traditional manual system of recording leads to losing of files and documents needed by the administration.
3. Manual record management required vast amounts of documents to be shipped to storage facilities only to necessitate retrieval when results in the unnecessary expense of both time and money.

4. At least one member of faculty is always needed to maintain the pass and to approve it.

Due to these disadvantages, many efforts have been put on to introduce a new system that would eliminate the use of paper work. This system works by sending E-mail for verification of students using internet connectivity. The entire student's information is stored in the centralized database server. This advance gate pass system is more fast and accurate than traditional one. The only requirement in this system is connection and communication between devices [7].

VIII. CONCLUSION

The paper assist in modifying the existing system by bringing automation and eliminating the use of paper. It can be controlled and monitored remotely and becomes easy and efficient by reducing man power. The system always provide accurate information .All the gathered information can be saved and can be accessed any time by the administration department. By bringing this kind of automation in the system, the flaws in maintaining the records gets diminished. So, it's better to have a Web-Based information management system.

IX. FUTURE SCOPE

The computer becomes important equipment to the organization to store the data and to process the data for any purpose. It can also be used to access and process any data and information needed easily and less in time. Therefore, it is hope that GATEMATE application system able to solve the problem according to these scopes:

1. By using Gate Mate, the organization has an option in increasing the level of security enforced in their premises.
2. Computerized records give better management and manipulation of data, through searching and report generation.
3. Its installation is easy and hence does not require professionals for the same.
4. The Gate Mate system is easy to maintain and use.
5. It gives reliable and efficient security protection on which one can rely.
6. Unauthenticated and unwanted users cannot enter the commercial space.
7. Biometric function can be coupled with the existing system to gain extra security.

X. REFERENCES

- [1] Vidyasagar, K., Sumalatha, M., Swathi, K., & Rambabu, M. Eco-friendly Environment with RFID Communication Imparted Waste Collecting Robot. Journal of Academia and Industrial Research (JAIR) Volume, 4, pp. 43-47, July 2015
- [2] Peairs, M., Hull, J. J., Cullen, J., & Suzuki, K. U.S. Patent No. 8,793,220. Washington, DC: U.S. Patent and Trademark Office, 2014.
- [3] Chaitanya L., Laxmikant K., Mamta B., Saachi J., Ashish P., Hemant W. E-Gatepass System. International Research Journal of Engineering and Technology (IRJET), 5(3), pp 3689- 3692, March 2018
- [4] Norizan Anwar, Mohamad Noorman Masrek, Yanty Rahayu Rambli, Visitor Management system by applying the model of UTAUT, IEEE symposium on Business, engineering and industrial application, 23-26 Sep,2012.
- [5] Elakkiya, Nirmala Priyadarshini, "Web-Based Hostel Management system for improving sustainable performance of Educational Instituttions", International Journal of Latest trends in Engineering and technology, Vol.10, Issue 1, PP.050-053,2017.
- [6] Prof. Abhay Gaidhani¹, Suraj Sahijwani², Parag Jain³, Shantanu Jadhav⁴, Ankush Jain⁵ ^{1,2,3,4,5} Department of Computer Engineering, Sandip Institute of Engineering Management, Nashik, Volume 02, Issue 10, [October –2015].
- [7] R. Halemani and A. Rajagopal, "Building automation security using can and IoT," 2015 International Conference on Applied and Theoretical Computing and Communication Technology (iCATccT), Davangere, 2015, pp. 471-476.